



1 GEO_11 - Developing an Urban Transect

2 Subject Area

Geography

3 Suggested Level

Years 9-10

4 Key Statistical Literacy Competencies

- Data awareness
- The ability to understand statistical concepts
- The ability to analyse and interpret and evaluate statistical information
- Communicating statistical information and understandings

5 Overview

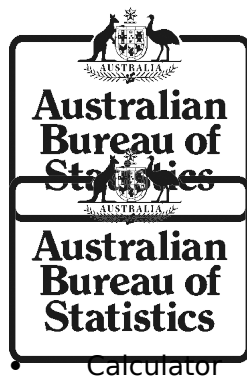
This activity seeks to visualise variations between parts of a city by using a transect across the area. A transect is a way of viewing change in natural and human features along a line. A transect introduces the concept of distance decay. How do the socio-economic characteristics of a city change as distance from the central business district increases? The activity includes the calculation of distance and therefore revises the concept of scale.

This classroom activity uses **Quickstats** to visualise some of the numerical census data. The activity provides sample data for a transect in selected capital cities, although a transect may be generated for any given region. The selected socio-economic statistics provided include demographic data (0-4 years, 5-14 years, 15-24 years and 65+ years), economic data (median household income as \$/week) and information about dwellings (characteristics of private dwellings). Teachers may choose to make their own selection from **QuickStats** Census data for areas of relevance to their curriculum.

Geo_11 may be undertaken individually or as a group activity. Groups could investigate different lines of transect and compare their findings.

6 Requirements

- Computer
- Internet connection



7 Instructions

Census data are being delivered in a number of new formats which are free online. Articles in Education News (cat.no 1330.0) for 2007 illustrate how to search for Census data.

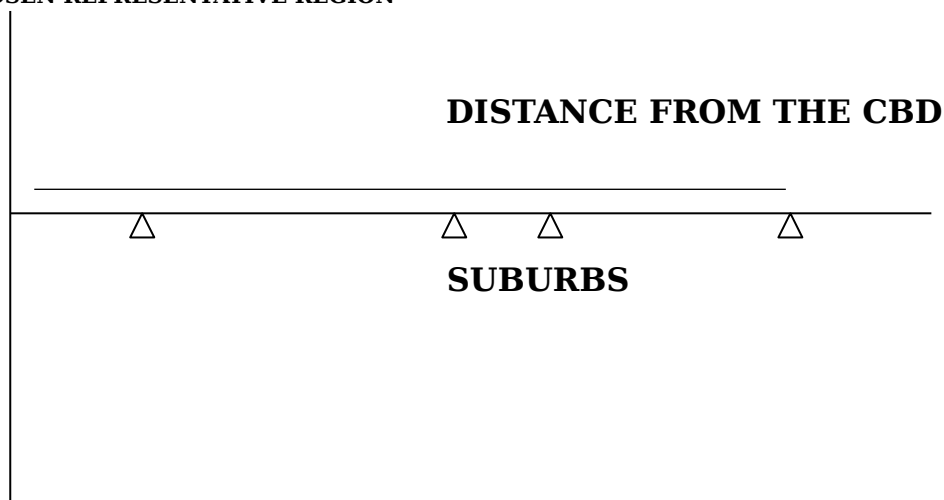
The activity uses one of the Census products, namely **QuickStats**, which provides summary data in tabular form, with comparative data for Australia. **QuickStats** are available for areas as large as Australia or as small as a Collection District (about 230 households) and a range of geographic units in between. QuickStats is one of a number of census products available free on the web.

1. Identify the line of transect. It may be from the central business district outwards to the rural urban fringe. Identify the geographical localities to be sampled along the line of transect. For the transect in urban areas use statistics from suburbs, postal areas, Local Government Areas and Statistical Local Areas, whilst in rural districts Statistical Local Areas or Statistical Divisions may be more useful. The examples provided are for suburbs in Melbourne and Statistical Local Areas in Sydney.
2. Provide students with a map of the area. Calculate the distance along the line of transect for each of the chosen geographic areas to be sampled.
3. Ask students to create their own copy of the diagram shown in Figure 1. They should create a scale for the horizontal axis representing the distances in kilometres of each sample location along the line of transect. Begin with zero where the y axis intercepts the horizontal or 'x' axis.



FIGURE 1. TRANSECT +) COMPARE SUBURBS WITH REPRESENTATIVE GEOGRAPHIC AREAS DATA.

% VARIATION OF TRANSECT AREAS FROM CHOSEN REPRESENTATIVE REGION



4. Students may work in groups or individually. Each group could be allocated a different line of transect to investigate.
5. If working in groups, allocate each member of the group one of the characteristics from the **QuickStats** table (e.g. people aged 0-4 years, median household income) to investigate. The group size will depend on the number of characteristics being studied. The examples in Tables 1a and 1b provides eight characteristics.

TABLE 1A: QUICKSTATS DATA FOR MELBOURNE						
	Melbourne Statistical Division	South Yarra	Caulfield	Clayton	Dandenong	Cranbourne
• Distance from CBD (kms)	• 0	• 4	• 9.5	• 19.5	• 29.	• 42.5
• People: (% of total persons in Region)						
• 0-4 years	6.3	3.3	5.2	4.2	6.3	6.7
• 5-14 years	12.6	4.3	10.0	6.1	11.2	14.6
• 15-24 years	14.1	15.4	11.8	33.3	13.7	15.2



• 65+ years	12.8	11.4	22.3	12.1	16.8	10.6
• Australian Born	64.2	55.9	50.6	30.2	33.4	73.3
• Households: Income (Population aged 15 years and over)						
• Median Household Income (\$/weekly)	1079	1225	1134	736	626	865
• Dwellings: (% of Occupied Private Dwellings)						
• Separate house	71.9	12.9	49.5	47.6	41.7	81.3
• Flat, unit or apartment	16.1	69.9	25.1	34.6	42.1	14.6

Source: 2006 QuickStats available at www.abs.gov.au/census

TABLE 1B: QUICKSTATS DATA FOR SYDNEY						
	Sydney Statistical Division	Sydney SLA ((Inner)	Leichardt SLA	Burwood SLA	Bankstown (NW) SLA	Fairfield (West) SLA
Distance from CBD (kms)	0	1	5	11	17	26.5
People: (% of total persons in Region)						
• 0-4 years	• 6.6	• 2.5	• 7	• 4.2	• 7.1	• 5.8
• 5-14 years	13	3.2	7.3	6.1	14.9	14.9
• 15-24 years	13.8	28.5	9.2	33.3	13.7	17.6

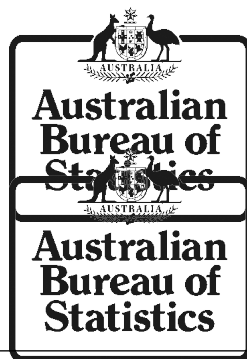


• 65+ years	12.3	6.4	9.6	12.1	14.4	8.5
• Australian Born	60.4	15.7	63.8	30.2	55	46.1
Households: Income (Population aged 15 years and over)						
• Median Household Income (\$/weekly)	1154	1078	1733	736	864	1122
Dwellings: (% of Occupied Private Dwellings)						
• Separate house	61.7	4.4	34.7	47.6	79.9	91.9
• Flat, unit or apartment	25.7	88.8	27.1	34.6	6	1

Source: 2006 QuickStats available at www.abs.gov.au/census

6. Ask the students to use **QuickStats** to obtain the value of their assigned characteristic for the chosen suburbs. In addition, ask the student to find the comparative statistic for the larger representative geographic region e.g. the Statistical Division or the value for the State.
7. Ask students to calculate the difference between the values for the suburb and comparative values for the representative area, by subtracting the values. Use a table similar to Table 2 to record the results.

TABLE 2: SELECTED QUICKSTATS DATA FOR CHOSEN AREAS AND COMPARISON WITH REPRESENTATIVE REGION						
	Representative region	Sample d Area A	Sample d Area B	Sample d Area C	Sample d Area D	Sample d Area E
5-14 years (% in age group)	12.6	4.3	10.0	6.1	11.2	14.6
Difference 5-14 years (% Sampled Area - % Representative	-	-8.3	-2.6	-6.5	-1.4	+2.0



region)						
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Some characteristics will be above the representative region (e.g. more 5-14 year olds in the chosen suburb compared with the Statistical Division) and will therefore be positive. Some values will be below and will therefore be represented by a negative value on the 'y' axis in Figure 1.

8. Ask students to review the differences between the suburb and the representative area and choose an appropriate scale for the 'y' axis. For each suburb students draw a column graph at the appropriate distance along the transect, which represents the percentage by which the suburb varies either positively or negatively from the representative region for that city or state.
9. The group comes together to see how each characteristic varies along the line of transect.

Questions:

1. Using the data created, **describe** the changes in the chosen demographic and socio-economic characteristics along the line of transect.
2. For the line of transect, **explain** the marked variations from the representative area values.
3. If several transects of different localities have been undertaken, compare transects for different parts of the city or State. **Explain** any differences identified.
4. Find a diagram of an urban transect showing changes in land use and building height. Relate this diagram to the completed transect. Is it possible to identify links between land use and socio-economic data for the chosen study area?
5. Prior to commencing the activity, ask students to suggest the demographic and socio-economic changes expected along the line of transect. On completion of the activity, assess the extent to which the expectations were accurate.

8 Answers



TABLE 1A: QUICKSTATS DATA FOR MELBOURNE

% VARIATION OF CHOSEN TRANSECT AREAS FROM REPRESENTATIVE GEOGRAPHIC REGION	Melbourne Statistical Division	South Yarra	Caulfield	Clayton	Dandenong	Cranbourne
• 0-4 years	• -	• -3	• - 1.1	• - 2.1	• 0	• 0.4
• 5-14 years	-	-8.3	-2.6	-6.5	-1.4	2
• 15-24 years	-	1.3	-2.3	19.2	-0.4	1.1
• 65+ years	-	-1.4	9.5	-0.7	4	-2.2
• Australian Born	-	-8.3	-13.6	-34	-30.8	9.1
• Median Household Income (\$/weekly)	-	\$146	\$55	-\$343	-\$453	-\$214
• Separate house	-	-59	-22.4	-24.3	-30.2	-9.4
• Flat, unit or apartment	-	53.8	9	18.5	26	-1.5

TABLE 1B: QUICKSTATS DATA FOR SYDNEY

% VARIATION OF CHOSEN TRANSECT AREAS FROM REPRESENTATIVE GEOGRAPHIC REGION	Sydney Statistical Division	Sydney (Inner) SLA	Leichardt SLA	Burwood SLA	Bankstown SLA	Fairfield (West) SLA
• 0-4 years	• -	• - 4.1	• 0.4	• - 2.4	• 0.5	• 0.8
• 5-14 years	-	-9.8	-5.7	-6.9	1.9	1.9
• 15-24 years	-	14.7	-4.6	19.5	-0.1	3.8
• 65+ years	-	-5.9	-2.7	-0.2	2.1	-3.8
• Australian Born	-	-44.7	3.4	-30.2	-5.4	-14.3
• Median Household Income (\$/weekly)	-	-\$76	\$579	-\$418	-\$290	-\$32
• Separate house	-	-57.3	-27	-14.1	18.2	30.2
• Flat, unit or apartment	-	63.1	1.4	8.9	-19.7	-24.7

9 Glossary



Transect

A transect diagram gives a summary of natural and/or human features along a line.

10 References

(Note: Links to ABS publications are to the most recent release. Previous releases can be accessed by selecting the 'Past & Future Releases' tab.)

ABS Census output may be accessed at
<http://www.abs.gov.au/websitedbs/d3310114.nsf/Home/census>

11 Feedback

To provide any feedback regarding this activity, please contact ABS Education Services on 1800 623 273 or email education@abs.gov.au.